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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/813,855

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Andrew D. Wilson

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EXAMINER

CARLOS, ALVIN LEABRES

ART UNIT

PAPER NUMBER

3715

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/813,855

Applicant(s)

WILSON, ANDREW D.

Examiner

ALVIN L. CARLOS

Art Unit

3715

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 December 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/GS-08)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date 03/11/10, 04/22/10

DETAILED ACTION

1. The following is a Final Office action in response to communications received December 23, 2009. Claims 1-2 and 12 have been amended and claim 27 is cancelled. Claims 1-21 are now pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 4-11 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (US 2005/0226467) in view of Wendt et al. (US 6895104) in view of Thieme et al. (US 2006/0056662) further in view of Biswas (US 7120280).

Re claims 1, Hatano discloses a method for detecting a pattern object (e.g. biometric image) comprising detecting a physical property of the patterned object when the patterned object is placed adjacent to an object side of an interactive display surface (e.g. quality evaluation) (paragraph 0031), computing sum of the set of template data values (paragraphs 0041-0042), calculating a difference score between the stored data values and the input data values (e.g. quality evaluation) and determining whether the difference score is within a match threshold (See Fig.2, elements 203, 204), preparing a stored template for runtime by loading a stored template (paragraphs 0038 and 0041), computing an intensity sum of the stored template (paragraphs 0031 and 0039).

Hatano discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of iteratively rotating the stored template in predefined increments through a full 360 degree rotation, and computing moments of pixel intensities from the rotated stored template image.

However, Wendt teaches iteratively rotating the stored template in predefined increments through an angled rotation, and computing moments of pixel intensities from the rotated stored template image (column 34 lines 48-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Hatano's invention by incorporating Wendt's teaching of model comparison using a series of rotating algorithms by predefined increments through any angled rotation (90, 180, 360 degrees) in order to provide a more effective model comparison using a series of shifting and rotating algorithms to adjust at least one image model and then count and calculate the number of matching data elements that would represents the correlation, relationship or percentage of match between two image models.

Hatano in view of Wendt discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of creating a template of the patterned object at a known orientation, the template comprising a quadrilateral template bounding region having a side aligned with one of the two orthogonal axes and a set of template data values associated with the quadrilateral template bounding region, each template data value representing a magnitude of the physical property at a

different one of a plurality of surface coordinate locations within a bounding area encompassing the patterned object.

However, Thieme teaches encapsulating image's physical property data such as grayscale, dimension etc. and generating templates (See abstract and paragraphs 0043-0044).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Hatano in view of Wendt invention by incorporating Thieme's teaching to generate data values for all the spatially shifting templates in order to design a system with a more accurate comparison result.

Hatano in view of Wendt in view of Thieme discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of the patterned object being placed in any arbitrary orientation or the template having quadrilateral bounding shape.

However, Biswas discloses in his invention a method that allows placing an image on the display surface in any arbitrary orientation without affecting the template matching capability of the device (column 7 lines 13-33), acquiring input data values from the interactive display surface, each of the values corresponding to a different one of the plurality of surface coordinate locations of the interactive display surface (e.g. acquiring the coordinate coefficient in order to compare the templates with the original reference image) (column 7 lines 13-33), quadrilateral shape of templates aligned with one of the two orthogonal axes (See Fig.1).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Hatano in view of Wendt in view of Thieme invention by incorporating the features of Biswas' invention in order to design a system that is more efficient in template matching process.

Re claim 2, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Hatano further discloses calculating the integral sum of input data and determining whether the sum is within a certain threshold (paragraphs 0041 and 0046-0047).

Re claim 4, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Biswas discloses creating a binary mask comprising transformed template data values, a mask bounding region having quadrilateral shape (See Fig.1), performing the steps of claim 2 (See Fig.5). Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the features of Biswas into the limitations of Hatano in view of Wendt in view of Thieme's invention in order to design a system with a more effective image processing features.

Re claim 5, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Biswas discloses generating templates, determining a distance between the first center associated with the mask bonding and a second center (See Fig.3), and determining the redundancy threshold (Column 3, 43-61 and Fig.5).

Re claim 6, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Biswas further discloses computing an integral image array, selecting from array elements corresponding to four corners of the quadrilateral template and computing an integral sum as a function of four array (Column 3, 43-61, Col.5, 4 - Col.6, 9).

Re claims 7 and 8, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Biswas further discloses a template matching process using a succession of surface coordinate locations (Column 6, 26-44).

Re claims 9 and 20, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Hatano disclose calculating the difference score for the images as a step in template matching process (paragraphs 0083-0085). Furthermore, the difference score is calculated as a sum of absolute difference and a sum of squared difference is considered to be a matter of design choice.

Re claim 10, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Biswas discloses computing the statistical moment of the template data and the input and determining whether the data is within the threshold value (Column 3, 43-61).

Re claim 11, Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above. In addition, Hatano

discloses a computer readable memory (e.g. storage unit) to carry out the steps of claim 1 (See Fig. 1, element 4-1).

4. Claim 3, 12-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano et al. (US 2005/0226467) in view of Wendt et al. (US 6895104) in view of Thieme et al. (US 2006/0056662) in view of Biswas (US 7120280) and further in view of Siegel et al. (US 2006/0034492).

Re claim 3, Hatano further discloses the template data value comprises pixel values (paragraph 0031).

Hatano in view of Wendt in view of Thieme in view of Biswas discloses all of the claimed subject matter as discussed above with the exception of disclosing the feature of physical property comprises light and that the pixel values indicate the intensity of light.

However, Siegel teaches physical property comprises light and that the pixel values indicate the intensity of light (paragraph 0033).

Therefore it would have been obvious to one of ordinary skill in the art to modify Hatano in view of Wendt in view of Thieme in view of Biswas by incorporating the features of Siegel's teaching in order to design a system that more effective image matching process.

Re claims 12 and 13, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above in claim 1. In addition, Siegel discloses an interactive display (e.g. scanner), a light source that directs the light toward the opposite side of the interactive display and

through the display, light sensor and a processing unit wherein the processing unit is in charge of detecting the intensity of light (paragraphs 0033 and 0077), and creating a template of the patterned object and acquiring the input data values (see Fig.8). The processing unit is also in communication with the light sensors (e.g. light sensitive elements of the display) (paragraph 0036). Siegel further discloses template data values representing the intensity of reflected light and acquiring input data values from the interactive display surface with the light sensor (paragraphs 0038-0039) and detecting with the light sensor the intensity of light reflected back from the patterned object (paragraph 0069). Furthermore, Biswas discloses computing the sum of the set of template data and calculating the difference score to determine whether or not the score falls within a threshold (column 3 lines 43-61, Fig.5, element 70), and the quadrilateral boundary region of the templates (See Fig.1).

Therefore it would have been obvious to one of ordinary skill in the art to modify Hatano in view of Wendt in view of Thieme in view of Biswas by incorporating the features of Siegel's teaching in order to design a system that more effectively image matching process.

Siegel discloses a variety of light colors that are directed toward the display (paragraph 0032). Siegel does not specifically disclose that the light source directs infrared light toward the opposite side of the interactive display. However, the applicant has not disclosed if applying infrared light solves any stated problem or provides any unexpected results. Moreover, one of ordinary skill in the art would expect the system to work equally well with any other light wavelength. Therefore, it would have been

obvious to one of ordinary skill in the art to modify the Siegel's invention to include infrared light source because such modification would have been considered a matter of design choice.

Re claim 14, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above. In addition, Biswas discloses that template data values comprising pixel values (See Fig.5, column 4 lines 14-29).

Re claim 15, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above. In addition, Biswas further discloses a mask bounding region that is used for quadrilateral template bounding (column 5 line 4 - column 6 line 25).

Re claim 16, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above. In addition, Biswas discloses generating templates, determining a distance between the first center associated with the mask bonding and a second center (See Fig.3), and determining the redundancy threshold (Fig. 5, column 3 lines 43-61).

Re claim 17, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above. In addition, Biswas further discloses computing an integral image array, selecting from array elements corresponding to four corners of the quadrilateral template and computing an integral sum as a function of four array (column 3 lines 43-61 and column 5 line 4 – column 6 line 9).

Re claim 18 and 19, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above. In addition, Biswas further discloses computing an integral image array, selecting from array elements corresponding to four corners of the quadrilateral template and computing an integral sum as a function of four array (column 3 lines 43-61 and column 5 line 4 – column 6 line 9), and a template matching process using a succession of surface coordinate locations (column 6 lines 26-44).

Re claim 21, Hatano in view of Wendt in view of Thieme in view of Biswas in view of Siegel discloses all of the claimed subject matter as discussed above. In addition, Biswas discloses computing the statistical moment of the template data and the input and determining whether the data is within the threshold value (column 3 lines 43-61).

Response to Arguments

5. Applicant's arguments with respect to claims 1-21 have been considered but are moot in view of the new grounds of rejection.

Conclusion

6. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALVIN L. CARLOS whose telephone number is (571)270-3077. The examiner can normally be reached on 7:30am-5:00pm EST Mon-Fri (alternate Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571)272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A.C./
Examiner, Art Unit 3715
June 18, 2010

/XUAN M. THAI/
Supervisory Patent Examiner, Art Unit 3715